

**DRAFT ENVIRONMENTAL ASSESSMENT
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

**PROPOSED RULE TO REPLACE AND CODIFY ONSHORE OIL AND
GAS OPERATIONS;
FEDERAL AND INDIAN OIL AND GAS LEASES;
ONSHORE OIL AND GAS ORDER NUMBER 5,
MEASUREMENT OF GAS**

DOI-BLM-WO310-2015-0005 EA

I. Introduction

This document examines the environmental impacts of the Bureau of Land Management's (BLM) proposed rule that would replace Onshore Oil and Gas Order Number 5 (54 FR 8100, February 24, 1989) ("Order 5"), with a new 43 CFR subpart 3175, and determines whether this particular regulatory action requires preparation of an environmental impact statement (EIS) under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321 *et seq.*

The Mineral Leasing Act (MLA), 30 U.S.C. 181 *et seq.*, the Mineral Leasing Act for Acquired Lands (MLAAL), 30 U.S.C. 351 *et seq.*, and various other statutes governing specific categories of land authorize the Secretary of the Interior (Secretary) to lease federally owned oil and gas deposits underlying onshore lands. Authority for leasing Indian allotted and tribal lands for oil and gas development is found at 25 U.S.C. 396a-396g, and the Indian Mineral Development Act (IMDA), 25 U.S.C. 2101-2108, which authorizes leases as well as other types of arrangements for development of Indian tribal oil and gas resources. Under applicable statutory and regulatory provisions and lease terms, lessees must pay a royalty of no less than 12½ percent based on the value of the production removed or sold from leased Federal lands. To ensure that the required royalty has been paid, section 101(a) of the Federal Oil and Gas Royalty Management Act (FOGRMA), 30 U.S.C. 1711(a), requires the Secretary to establish a "comprehensive inspection, collection, and fiscal and production accounting and auditing system to provide the capability to accurately determine oil and gas royalties . . ." due under Federal and Indian oil and gas leases.

The Secretary has designated the BLM as the agency responsible for ensuring the proper handling, measurement, disposition, and site security of oil and gas produced from onshore Federal and Indian leases and to accurately account for production from those leases. Ensuring that correct royalty payment is made is achieved, in part, through the accurate measurement, proper reporting, and proper handling and accountability of production from Federal and Indian oil and gas leases. The BLM currently regulates those activities through Onshore Oil and Gas Orders Nos. 3, 4, and 5. This assessment analyzes the BLM's proposal to update and replace Order 5.

The proposed rule replacing Order 5 would revise the existing minimum standards for accurate measurement and proper reporting of all gas removed or sold from Federal and Indian leases, unit Participating Areas (PAs), and Communitized Areas (CAs), by providing a system of production accountability for operators, lessees, purchasers, and transporter. This proposed rule includes requirements for the hardware and software related to approved metering equipment, procedures for inspecting and verifying metering equipment, collecting and analyzing gas samples, overall measurement performance standards, and the calculation and reporting of volume and heating value. The proposed rule identifies certain specific acts of noncompliance that will result in an immediate assessment and it also proposes changes to the BLM's existing regulations governing assessments and civil penalties in the oil and gas context.

The Department of the Interior's oil and gas program is one of the Federal Government's most-critical nontax revenue-generating programs. For fiscal year (FY) 2014, onshore Federal oil and gas leases produced about 148 million barrels of oil, 2.48 trillion cubic feet of natural gas, and 2.9 billion gallons of natural gas liquids, with a market value of more than \$27 billion, and generated royalties of almost \$3.1 billion. Nearly half of these revenues are distributed to the States in which the leases are located. Leases on tribal and Indian lands produced 56 million barrels of oil, 240 billion cubic feet of natural gas, and 182 million gallons of natural gas liquids, with a market value of almost \$6 billion, and generated royalties of over \$1.0 billion that were all distributed to the applicable tribes and individual Indian allottee owners.

The regulatory updates developed as part of the proposed rule are based on the BLM's evaluation of Order 5's existing requirements, its gas measurement experience in the field, and the conclusions and recommendations contained in multiple separate reports by outside entities—one by the Secretary's Subcommittee on Royalty Management (Subcommittee), issued in 2007; one by the Department's Office of Inspector General (OIG), issued in 2009; and multiple by the Government Accountability Office (GAO).

In 2007, the Secretary of the Interior appointed the Subcommittee to review the procedures and processes surrounding the management of mineral revenues and to provide advice to the Department. The Subcommittee was commissioned to report to the Royalty Policy Committee, which is chartered under the Federal Advisory Committee Act, to provide advice to the Secretary and other Departmental officials responsible for managing mineral leasing activities and to provide a forum for the public to voice their concerns about mineral leasing activities. This report makes certain recommendations to the BLM to improve its production verification program, including improvements to the regulations and guidance governing gas measurement. The Subcommittee specifically recommended that the BLM evaluate Order 5 to ensure that it includes sufficient guidance for ensuring that accurate royalties are paid on Federal gas production. In response, the Interior Department formed a Fluid Minerals Team comprised of Departmental oil and gas experts. The team determined that Order 5 should be updated in light of changes in technology and BLM and industry practices.

In addition to the Subcommittee report, findings and recommendation addressing similar issues have been issued by the GAO (Report to Congressional Requesters, Oil and Gas Management, Interior's Oil and Gas Production Verification Efforts Do Not Provide Reasonable Assurance of

Accurate Measurement of Production Volumes, GAO-10-313 (GAO 2010 Report), and Report to Congressional Requesters, Oil and Gas Resources, Interior's Production Verification Efforts: Data Have Improved but Further Actions Needed, GAO 15-39 (GAO 2015 Report)) and the OIG (Bureau of Land Management's Oil and Gas Inspection and Enforcement Program, CR-EV-0001-2009).

In its 2010 report, the GAO found that the Department's measurement regulations and policies do not provide reasonable assurances that oil and gas are accurately measured because, among other things, its policies for tracking where and how oil and gas are measured are not consistent and effective (GAO 2010 Report, p. 20). The report also found that the BLM's regulations do not reflect current industry-adopted measurement technologies and standards designed to improve oil and gas measurement (*ibid.*). The GAO recommended that Interior provide Department-wide guidance on measurement technologies not addressed in current regulations and approve variances for measurement technologies in instances when the technologies are not addressed in current regulations or Department-wide guidance (see *ibid.*, p. 80). The OIG report made a similar recommendation that the BLM, "Ensure that oil and gas regulations are current by updating and issuing onshore orders...." (see page 11). In its 2015 report, the GAO reiterated that "Interior's measurement regulations do not reflect current measurement technologies and standards," and that this "hampers the agency's ability to have reasonable assurance that oil and gas production is being measured accurately and verified" (GAO 2015 Report, p. 16.) Among its recommendations were that the Secretary direct the BLM to "meet its established time frame for issuing final regulations for oil measurement." (*ibid.*, p. 32.)

The GAO's recommendations related to the adequacy of the BLM's gas measurement rules are also significant because they formed one of the bases for the GAO's inclusion of the BLM's oil and gas program on the GAO's High Risk List in 2011 (Report to Congressional Committees, High Risk Series, An Update, GAO-11-278). Specifically, the GAO concluded in 2011 "that Interior's verification of the volume of . . . gas produced from federal leases—on which royalties are due the federal government—does not provide reasonable assurance that operators are accurately measuring and reporting these volumes." (GAO-11-278, p.15.) Because the GAO's recommendations have not yet been fully implemented, the onshore oil and gas program has remained on the High Risk List in subsequent updates in 2013 (Report to Congressional Committees, High Risk Series, An Update, GAO-13-283) and 2015 (Report to Congressional Committees, High Risk Series, An Update, GAO-15-290). From a High Risk List perspective, one of the open items is updating the BLM's regulations and guidance governing gas measurement.

It has been over 25 years since the issuance of Order 5. In that time, technology and practice associated with the measurement of gas have evolved significantly. The proposed rule responds to those changes and the recommendations from the Subcommittee, GAO, and the OIG. The proposed rule was also developed by the BLM to enhance and clarify some of the requirements in Order 5 in response to changes in technology, BLM field experience, and changes to applicable statutory requirements.

II. Purpose and Need for Action and Decision to be Made

The purpose of the proposed Federal action is to replace Order 5 with codified regulations that would improve the BLM's regulatory framework to account for natural gas produced from Federal and Indian leases. The BLM's experiences in the field and previous independent investigations have indicated the need for the BLM to update its production verification program (including its regulatory framework). These investigations have suggested that not doing so could result in inaccurate measurements of natural gas produced from Federal and Indian (except Osage Tribe) leases, and ultimately inaccurate royalty payments.

The need for the action is established by the BLM's responsibility under the MLA, as amended by the Federal Onshore Oil and Gas Leasing Reform Act of 1987, and the Energy Policy Act of 2005, to promote the development of oil and gas on the public domain. The MLA establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior.

The decision to be made is to determine whether it is appropriate to replace Order 5 with prescribed standards that would better assure that natural gas production from Federal and Indian leases is accurately measured and accounted for.

III. Proposed Action and Alternatives

In this regulatory environmental analysis, the BLM considered two alternatives:

- No Action; and
- Replacement of the requirements in Order 5 as set forth in the proposed rule.

a. No Action Alternative

This alternative would keep the existing Order 5 in place. Any updated practices outlined in this proposed rule that would reduce the risk of inaccurate measurement, reporting, and accounting of gas produced from Federal and Indian oil and gas leases would not be implemented.

b. Description of the Proposed Action

The proposed rule would replace Order 5 with rules codified in a new 43 CFR subpart 3175, within a new part 3170.¹ Table 1 provides an overview of the substantive changes between Order 5 and the proposed rule at 43 CFR subpart 3175.

¹ The BLM has previously published a separate proposed rule to replace Onshore Oil and Gas Order No. 3 (Order 3) (site security), which the BLM would codify at a new 43 CFR subpart 3173. See 80 FR 40767 (July 13, 2015). As part of the 3173 proposed rule, the BLM also proposed a new subpart 3170 that contains definitions and other provisions common to both that rule and the proposed rules to update and replace Orders 4 and 5.

Table 1. Comparison of Requirements in Order 5 versus the Proposed Rule

| Order 5 | Proposed Rule | Substantive changes |
|--|-----------------------------------|---|
| I. Introduction | | |
| A. Authority | No section in the proposed rule. | This section of Order 5 would appear in proposed 43 CFR 3170.1. New subpart 3170 was proposed separately in connection with proposed new 43 CFR subpart 3173 (site security), (80 FR 40768, July 13, 2015). |
| B. Purpose | No section in the proposed rule. | Addressed in proposed 43 CFR subpart 3170 published previously. |
| C. Scope | No section in the proposed rule. | See proposed new 43 CFR 3170.2 (80 FR 40802, July 13, 2015). |
| II. Definitions | 43 CFR 3175.10 | The list of definitions in the proposed rule would be expanded to include numerous additional technical terms and volume thresholds for applicability of requirements. Definitions relating to enforcement actions would be removed. A list of additional acronyms would be added. |
| III. Requirements | | |
| A. Required Recordkeeping | No section in this proposed rule. | See proposed new 43 CFR 3170.7 (80 FR 40804, July 13, 2015). |
| B. General <ul style="list-style-type: none"> • Adoption of AGA Report No. 3 • Applicability to existing and future meters • Exemptions for meters measuring less than 100 Mcf/day • Enforcement | 43 CFR 3175.31 | <p>The proposed rule would adopt, in whole or in part, the latest applicable versions of relevant API and GPA standards. Timelines for retrofitting existing equipment to comply with the rule would be added on a sliding scale based on four different volume thresholds. These volume thresholds would be established to allow exceptions to specific requirements for lower-volume FMPs.</p> <p>This proposed rule would remove the enforcement, corrective action, and abatement period provisions of Order 5. In their place, the BLM would develop an internal inspection and enforcement handbook that would direct inspectors on how to classify a violation, how to determine what the corrective action should be, and the proper timeframe for correcting the violation.</p> <p>This change would improve consistency and clarity in enforcement nationally. The enforcement actions listed in Order 5 give the impression that they are mandatory. In practice, the violations' severity and corrective action timeframes should be decided on a case-by-case basis, using the</p> |

| Order 5 | Proposed Rule | Substantive changes |
|---|---|--|
| | | <p>definitions in the regulations. In deciding how severe a violation is, BLM inspectors must take into account whether a violation “could result in immediate, substantial, and adverse impacts on . . . production accountability, or royalty income.” What constitutes a “major” violation in a high-volume meter could, for example, be very different from what constitutes a “major” violation in a meter measuring substantially lower production. The authorized officer (AO) would use the enforcement handbook in conjunction with 43 CFR subpart 3163 when determining appropriate assessments and civil penalties.</p> |
| C. Gas Measurement by Orifice Meter | | |
| Paragraphs 1, 2, 3, 6, 8, 9, 10, 11 (Orifice plate and meter tube standards) | 43 CFR 3175.80 | The proposed rule would adopt, in whole or in part, the current API standards for orifice plates and combine all the requirements for orifice plates in one section. |
| Paragraphs 4, 5, 7, 12, 13, 14, 15, 16, 17, 18, 19 (Chart recorder standards) | 43 CFR 3175.90 - 3175.94 | <p>The proposed rule would restrict the use of mechanical recorders to those FMPs measuring 100 Mcf/day or less. In addition, it would establish new standards for volume calculation, verification, and design parameters for manifolds and gauge lines. The proposed rule would also lower the volume threshold for required use of continuous temperature recorders from 200 Mcf/day or less, to 15 Mcf/day or less.</p> |
| Paragraph 20 (Volume estimate for malfunction or out of service) | 43 CFR 3175.126 | The requirement for estimating volumes when metering equipment is malfunctioning or out-of-service would make clear the acceptable methods of estimating volume and associated documentation. |
| Paragraph 21 (Volume calculation AGA 3) | 43 CFR 3175.90 - 3175.94, 3175.100 – 3175.103 | The proposed rule would update the reference to industry standards for required flow-rate calculations. Requirements would be added to clarify how volume is determined from the calculated flow rate. |
| Paragraph 22 (Location of meter requirement) | 43 CFR 3175.70 | Requirements for obtaining approval for off-lease measurement and commingling and allocation would be revised and moved into the proposed new rule that would replace Onshore Oil and Gas Order No. 3 (Order 3) published previously (proposed 43 CFR subpart 3173), 80 FR 40768 (July 13, 2015), |

| Order 5 | Proposed Rule | Substantive changes |
|--|---|--|
| | | but would be referenced in this subpart. |
| Paragraph 23 (Btu requirement) | 43 CFR 3175.110 – 3175.121 | The requirements for gas sampling and analysis would be expanded to include requirements for sampling location and methods, sampling frequency, analysis methods, and the minimum number of components to be analyzed. This section would also define the effective date of the heating value and relative density determined from the sample. |
| Paragraph 24 (Calibration form information requirement) | 43 CFR 3175.90, 3175.92, 3175.100, and 3175.102 | The information required on meter calibration reports would be expanded for both mechanical recorders and EGM systems. |
| Paragraph 25 (Atmospheric pressure requirement) | 43 CFR 3175.90, 3175.92, 3175.100, and 3175.102 | The proposed rule would change the basis for determining atmospheric pressure from a contract value to a measurement or calculation based on elevation. The calculation is prescribed in the proposed rule. |
| Paragraph 26 (Method and frequency - specific gravity) | 43 CFR 3175.110 - 3175.120 | Order 5 has no requirements pertaining to the determination of relative density. The proposed rule would establish methods for deriving the relative density from the gas analysis. |
| No requirements for EGM systems – Addressed in statewide NTLs | 43 CFR 3175.100 – 3175.126 | Order 5 does not address EGM systems; however, these devices are addressed in the statewide NTLs for electronic flow computers. The proposed rule would adopt many of the provisions of the statewide NTLs and add requirements relating to on-site information, gauge lines, verification, test equipment, calculations, and information generated and retained by the EGM system. |
| D. Gas Measurement by Other Methods or at Other Locations Acceptable to the Authorized Officer | 43 CFR 3175.47, 3175.48, and 3175.70 | Requirements for obtaining approval for off-lease measurement and commingling and allocation would be revised and moved into the new proposed rule that would replace Order 3 published previously and cited above, but would be referenced in this subpart. In addition, this proposed change would establish a consistent and nationwide process for review and approval of alternate primary devices and flow conditioners used in conjunction with flange-tapped orifice plates. |
| No requirements for transducer or flow computer testing | 43 CFR 3175.130 – 3175.144 | The proposed rule would establish a testing protocol and approval process for transducers used in EGM systems and flow-computer |

| Order 5 | Proposed Rule | Substantive changes |
|---|-----------------------------------|---|
| | | software. |
| No requirements for reporting of volume and heating value | 43 CFR 3175.126 | The proposed rule would establish standards for heating value reporting, averaging heating value from multiple FMPs and multiple samples, and volume reporting. |
| IV. Variance from Minimum Standards | No section in this proposed rule. | See proposed new 43 CFR 3170.6 (80 FR 40804, July 13, 2015). |
| No immediate assessments | 43 CFR 3175.150 | The proposed rule would add 10 new violations that would be subject to an immediate assessment of \$1,000, as follows: (1) New FMP orifice plate inspections not conducted and documented; (2) Routine FMP orifice plate inspections not conducted and documented; (3) Visual meter-tube inspection not conducted and documented; (4) Detailed meter-tube inspections not conducted and documented; (5) Initial mechanical-recorder verification not conducted and documented; (6) Routine mechanical-recorder verifications not conducted and documented; (7) Initial EGM-system verification not conducted and documented; (8) Routine EGM-system verification not conducted and documented; (9) Spot samples for low-volume and marginal-volume FMPs not taken at the required frequency; and (10) Spot samples for high-volume and very-high-volume FMPs not taken at the required frequency. |

Major changes to this regulation are related to: (i) The frequency, methods, and equipment for gas sampling and analysis, and the basis on which heating value is calculated from these analyses; and (ii) The minimum performance standards and specifications for hardware and software used in gas metering devices, including the need to inspect and calibrate certain equipment on a periodic basis.

c. Alternatives Considered but Eliminated from Detailed Study

Several alternatives were initially considered but eliminated from detailed study. One alternative that was considered was to require raw data generated at the meter to be provided directly to the BLM in real time (referred to as “remote data acquisition,” or “RDA”). However, a pilot project conducted between 2002 and 2009 revealed substantial problems that would make it infeasible to implement RDA on a broad scale. Another study commissioned by the Office on Natural Resources Revenue (“Feasibility of Automated Production Metering Systems in Sending Electronic Data to Onshore Facilities for Analysis,” Southwest Research Institute, July, 2014 (Project No. 18.17965.01.176)) came to similar conclusions. This alternative was not carried

forward for detailed analysis because the costs of implementing an RDA system would be far greater than any benefit derived from such a system.

Another alternative considered was to limit the number of flow-rate categories to only “low volume” and “high volume,” rather than the four categories that are proposed (“marginal volume,” “low volume,” “high volume,” and “very-high volume”). The purpose of the flow-rate categories is to ensure more accurate measurement for higher-volume meters, where the risk that the Federal Government or an Indian tribe would under-collect or over-collect royalties (known as “royalty risk”) is greater, while reducing operating costs for lower-volume meters with less royalty risk. Analysis showed that it would have been much more difficult to achieve this balance with only two categories, as opposed to the four categories contemplated by the proposed rule.

Another alternative considered was to propose a fixed sampling frequency for heating values based on the volume passing through the meter, instead of the dynamic sampling frequency in the proposed rule for “high-” and “very-high-” volume facility measurement points (FMPs). A fixed sampling frequency would have been somewhat easier to implement because the maximum time between sampling for a particular FMP would not change. Royalty risk for high-volume FMPs could be reduced by requiring more frequent samples. However, setting an appropriate sampling frequency is difficult and would not ensure that a set level of accuracy would be achieved.

The proposed rule sets average annual heating value uncertainty requirements of ± 2 percent for high-volume FMPs and ± 1 percent for very-high-volume FMPs. Alternative uncertainty levels were considered, including ± 3 percent (high volume) and ± 2 percent (very high volume), the same levels proposed for volume uncertainty. Generally, the higher the allowable uncertainty, the lower the cost of compliance and the higher the royalty risk. The ± 3 percent/ ± 2 percent thresholds were not carried forward for detailed analysis because lower uncertainty limits are achievable at relatively little cost without the higher royalty risk associated with this option. The proposed rule attempts to balance royalty risk and the cost of compliance.

Several alternative meter tube and orifice plate inspection frequencies were considered during the development of the proposed rule, including inspections at both higher and lower frequencies than specified in the proposed rule. Lower inspection frequencies than proposed would result in some minor cost savings but would increase royalty risk. Increasing the inspection frequencies above the frequency proposed would result in relatively high cost increases with relatively little reduction in the royalty risk. The proposed alternative attempts to balance cost and reduction of royalty risk.

Finally, the BLM considered including other types of meters besides flange-tapped orifice plate meters, such as ultrasonic, turbine, and Coriolis meters. While some of these meters offer higher accuracy than orifice plate meters, they also are more difficult to independently verify and are not widely used for lease-level gas measurement because of cost. Because including other types of meters would add to the complexity of the regulation with no significant benefits, these alternatives were not carried forward for detailed analysis.

A more detailed discussion of the alternatives considered and the reasons for eliminating them from analysis is contained in the accompanying Economic and Threshold Analysis at pp. 11-18.

IV. Affected Environment

The BLM manages over 245 million acres of public lands and administers 700 million acres of subsurface mineral estate in the United States. Public lands under the management of the BLM are extraordinarily diverse, and include desert mountain ranges, coastal areas, alpine tundra, evergreen forests, expanses of rangeland, and red rock canyons. These lands are managed for a variety of uses that include recreation, conservation, mining, livestock grazing, rights-of-way, and oil and gas development.

The BLM's land use plans provide the framework that guides the decision for every action and approved use that occurs on lands the agency manages. Figure 1, on the following page, illustrates the land use planning area boundaries and regions where oil and gas development administered by the BLM occurs, mostly throughout the West. Table 2 lists the land use plans in which oil and gas development primarily occur. Each land use plan contains a detailed description of the physical, biological, and socioeconomic environment within the boundaries of the plan. The description of the affected environment includes the resource values, resource uses, special designations, and socioeconomic settings present within each planning area.

The BLM oversees the development of federal mineral resources in 32 states. As of October 30, 2014, there were 46,183 Federal onshore oil and gas leases in effect, covering 34,592,450 acres. Of these, there were 23,657 producing Federal onshore oil and gas leases covering 12,690,806 acres. The majority of the Federal Government's onshore oil and gas leases are located in the West. Thus, this analysis concentrates on those western states. That said, any environmental effects of the proposed rule are expected to be consistent on Federal and Indian lands throughout the United States where the BLM has management responsibilities. Figure 1 and Table 2 identify the primary oil and gas producing areas in the western United States.

The proposed rule would apply to all Federal and Indian (except Osage Tribe) leases issued under various Federal and Indian mineral leasing laws that include, but are not limited to, the MLA, the MLAAL, the Indian Mineral Leasing Act of 1938, the Indian allotted lands leasing statute at 25 U.S.C. 396, and the IMDA.

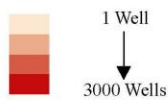
Federally Administered Oil and Gas Activity in the Western U.S



U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management



Well Density



Boundaries

— LUP
Boundary
— State
Boundary

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This map was created by WO-300 staff on 2011.12.21

Map uses a UTM Zone 13 North (NAD83) Projection

Intensity of color within the map is proportional to the level of oil and gas development within a specific area. This analysis is based on the amount of wells producing per township.

Figure 1

Table 2. BLM Land Use Planning Area with Oil and Gas Development Activities in the Western United States

| STATE | LAND USE PLAN NAME | STATE | LAND USE PLAN NAME |
|-------|----------------------------------|-------|---------------------------|
| AZ | Arizona Strip RMP | NM | White Sands |
| CA | Bakersfield RMP | NV | Wells RMP |
| | South Coast RMP | | Elko RMP |
| | Sierra RMP | | Tonopah RMP |
| | Hollister RMP | | Ely RMP |
| | Ukiah RMP | UT | Moab RMP |
| | West Mohave RMP | | Monticello RMP |
| CO | Grand Junction RMP | | Richfield RMP |
| | Little Snake RMP | | Vernal RMP |
| | Kremmling RMP | | Price RMP |
| | Northeast RMP | | Kanab RMP |
| | White River RMP | | Green River RMP |
| | Glenwood Springs RMP | | Buffalo RMP |
| | Royal Gorge RMP | WY | Newcastle RMP |
| | San Juan/San Miguel RMP | | Grass Creek RMP |
| MT | North Dakota RMP | | Washakie RMP |
| | Powder River RMP | | Cody RMP |
| | Big Dry RMP | | Lander RMP |
| | Billings RMP | | Jack Morrow Hills RMP |
| | West Hi-Line RMP | | Powder River |
| | Judith, Valley, and Phillips RMP | | Casper (Platte River) RMP |
| | Upper Missouri River Breaks NM | | Pinedale RMP |
| NM | Rio Puerco RMP | | Rawlins RMP |
| | Taos RMP | | Kemmerer RMP |
| | Carlsbad RMP | | |
| | Farmington RMP | | |
| | Roswell RMP | | |

V. Environmental Effects

The following analysis evaluates the effects on the quality of the human environment that may occur as a result of the proposed changes to the requirements in Order 5.

a. Assumptions Made as Part of the Impact Analysis

Many of the new requirements that would be established by the proposed rule are of an administrative or procedural nature as they pertain to reporting, maintenance of records, circumstances for granting variances to the requirements of the proposed rule, and immediate assessments for not complying with the proposed rule. These administrative and procedural changes would have no impact on the quality of the human environment.

There are other requirements of the proposed rule that may have an effect on the quality of the human environment. Those requirements include: (i) increased frequency for collecting spot samples of gas to determine the heating value and relative density at a given FMP; (ii) the frequency for inspecting or calibrating various components of gas metering systems; and (iii) new standards to be used for certain hardware and software equipment that are components of the overall gas metering system.

To comply with these requirements, operators or their representatives would be required to travel to and from oil and gas locations with gas metering systems to collect gas samples and perform various inspection and calibration activities, which would have some impacts. Similarly, where existing gas metering systems are not consistent with the rule's proposed standards for hardware and software, a one-time retrofit would be performed. However, additional surface disturbances would not be necessary to comply with these requirements.

b. Direct and Indirect Effects of the Proposed Action

The White House's Council on Environmental Quality (CEQ) NEPA implementing regulations at 40 CFR 1508.8(a) define "direct effects" as "...those effects which are caused by the action and occur at the same time and place." The regulations go on to define "indirect effects" as those effects "...which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on water and air and other natural systems, including ecosystems." (40 CFR 1508.8(b)).

The following discussion identifies the direct and indirect effects that may result from immediate implementation of the proposed rule.

Surface Disturbance

All surface activities that operators or their representatives would conduct to comply with the proposed new standards for collecting gas samples, performing inspection and calibration activities, and retrofitting existing measuring equipment may increase the amount of human presence that currently takes place on leases producing gas.

For the purpose of this analysis, human presence comprises vehicle traffic to specific FMP locations, primarily via two-axle trucks, through existing local and oil and gas resource roads. It also includes the use of small earth-moving equipment, such as a back hoe, at existing measurement facilities to upgrade/retrofit certain equipment when necessary, such as meter tubes that are part of the gas metering system. These activities would take place on surface that has already been disturbed and has infrastructure in place, such as pipelines, separation equipment, compressors, and production measurement facilities. Disturbance of additional surface areas would not be necessary to comply with these requirements.

Air Resource Impacts

Engine Emissions

Unlike truck traffic that is associated with the construction, drilling, and completion of an oil and gas well or the truck traffic that may be necessary to transport fluids (water and/or oil) produced from a lease, which requires multiple trips from large diesel-powered vehicles on a continuous basis, traffic that would result from implementing the requirements identified in the previous paragraphs would be the type that occurs during the production phase of a well. This is typically a one-time commute (for retrofitting activities) or occasional commute (for inspection, gas sampling, and calibration activities) to and from an oil and gas location with a pickup truck, rather than a multi-wheeled heavy equipment diesel truck, to perform the various required activities.

This traffic would be insignificant in intensity as compared to traffic caused by large heavy equipment trucks used during the construction, drilling, and completion phase of a well or the truck traffic that is associated with the transportation of fluids produced from a lease. In many instances, the activities necessary to perform retrofits or inspection, sampling, and calibration activities would be incorporated into daily maintenance activities that operators already perform on existing gas well locations, especially on leases with a substantial amount of production. Therefore, truck traffic-related activities that may result from implementing certain requirements of this proposed rule would be negligible.

Gas venting

Several of the activities associated with gas measurement result in the release of small amounts of natural gas, comprised primarily of methane. These activities include gas sampling, orifice plate inspections, and meter tube inspections. The proposed rule would increase the frequency of these activities which would increase the methane emissions associated with them. Methane is a greenhouse gas, with climate impacts roughly 25 times those of CO₂, if measured over a 100-year period, or 86 times those of CO₂, if measured over a 20-year period. As set forth below, the amount of methane vented as a result of the proposed rule is considered insignificant.

Gas sampling

Operators must periodically sample the natural gas they remove or sell from Federal and Indian leases in order to determine the heating value and relative density of the gas. Both the heating value and the relative density affect the royalty due. The proposed rule would set standards on how the samples are taken and would adopt the procedures in API Manual of Petroleum Measurement Standards (MPMS) 14.1. One of the most common procedures, which would also be allowed under the new rule, is called the “Fill and Empty” method, where the sample cylinder is filled and then emptied a set number of times in order to purge any contaminants from the cylinder that could alter the composition of the gas. The minimum number of fill and empty cycles required by API MPMS 14.1 depends on the pressure at the meter as shown below:

| Pressure (psig) | Number of Fill and Empty Cycles | Gas vented (scf) |
|-----------------|---------------------------------|------------------|
| 15-29 | 13 | 0.35 |
| 30-59 | 8 | 0.34 |
| 60-89 | 6 | 0.39 |
| 90-149 | 5 | 0.48 |
| 150-500 | 4 | 0.98 |
| 500+ | 3 | 1.43 |

When the cylinders are emptied, the contents of the cylinder are vented to the atmosphere. The right-hand column in the table above shows how many total standard cubic feet (scf) of gas are vented for each sample. These values assume a 300 cubic-centimeter sample cylinder and a pressure that is midway in the range given (e.g., 22 psig for the first entry).

Another sampling method that would be allowed under the proposed rule is the use of a portable gas chromatograph (GC) which eliminates the need for a sample cylinder. With this method, the gas chromatograph is taken to the field and connected directly to the sample probe with small plastic tubing, typically 1/8 of an inch in diameter. Gas flows from the sample probe, through the plastic tubing, and into the GC where it is analyzed for composition. Prior to analyzing the gas, however, the gas is allowed to flow through the 1/8 inch tubing for several minutes to purge any contaminants out of the tubing. Assuming an inlet pressure of 25 psig, the flow rate through the tubing would be approximately 100 scf per hour. Purging the line for four minutes would vent about 7 scf of gas.

Order 5 requires operators to determine the heating value of the gas at each measurement location at least annually. The proposed rule would maintain the annual heating value determination for marginal volume FMPs and would increase the frequency for low-volume FMPs to twice per year. The sampling frequency for high- and very-high volume FMPs would vary in order to achieve a set level of average annual heating value uncertainty. A summary of the increase in the number of samples per year for all producing Federal and Indian leases that would result from the proposed rule is given in the following table:

| Sample Frequency | Change from Existing Order 5 per FMP | Increase in Number of Samples Per Year | | | |
|------------------|--------------------------------------|--|-------------|------------|----------------|
| | | Very-high Volume | High-volume | Low-volume | Total |
| Weekly | +51 | 3,152 | 28,724 | | 31,876 |
| Bi-weekly | +25 | 3,434 | 33,999 | | 37,433 |
| Monthly | +11 | 2,039 | 23,799 | | 25,838 |
| Quarterly | +3 | 412 | 7,212 | | 7,624 |
| Semi-annually | +1 | 213 | 7,294 | 31,732 | 39,239 |
| Total | | | | | 142,010 |

For the purpose of this analysis, the BLM estimates that 50 percent (71,005 samples per year) of the total increase in samples would be collected with a sample cylinder and the other 50 percent (71,005 samples per year) would be obtained using a portable gas chromatograph. For the additional samples collected with a sample cylinder, assuming the average sampling pressure would be in the range of 90-149 psig, the total annual increase in vented gas from sampling with a cylinder is 71,005 samples per year times 0.48 scf per sample, or 34,082 scf per year. For the additional samples obtained with a portable GC, the increase in vented gas would be 71,005 samples per year times 7 scf per sample, or 497,035 scf. The total annual increase of vented gas (sample cylinders plus portable GC) would be 531,117 scf, or 531.1 Mcf.

Orifice plate inspections

In order to ensure the accuracy of an orifice meter, an operator must periodically pull the orifice plate from the meter tube and visually inspect it. A worn orifice plate can have a significant effect on the accuracy of the meter. For the majority of gas meters, the orifice plate cannot be pulled from the meter tube until gas pressure inside the meter tube is released. This is done by shutting valves on both ends of the meter tube (upstream and downstream of the orifice plate) and then opening a vent valve to release the gas inside the meter tube to the atmosphere. There is one type of fitting, called a “senior fitting,” which allows an operator to remove the orifice plate from the meter tube without releasing pressure from the meter tube. The BLM estimates that 10 percent of FMPs are equipped with a senior fitting. However, for purposes of this analysis, the BLM assumes that all FMPs will require releasing pressure in order to pull the orifice plate.

The amount of gas released from a meter tube during the venting process depends on the diameter and length of the meter tube and on the gas pressure. Assuming a 3-inch diameter meter tube that is 147 inches long (the minimum length required by API MPMS 14.3.2) and has a flowing pressure of 120 psig, 5.7 scf of gas would be released in order to pull and inspect an orifice plate.

Under Order 5, an operator must pull and inspect the orifice plate at least semi-annually. Under the proposed rule, the frequency would vary based on the average flow rate measured by the FMP. The following table shows the change in orifice plate inspections proposed in the new rule:

| FMP Category | FMPs in each Category (percent) | Orifice Plate Inspection Frequency | Change from Existing Order 5 per FMP | Change in Number of Orifice Plate Inspections per year |
|---------------------|--|---|---|---|
| Very High | 1.3 | Monthly | +10 | +8,929 |
| High | 21.2 | Quarterly | +2 | +29,122 |
| Low | 46.2 | Semi-annually | 0 | 0 |
| Marginal | 31.3 | Annually | -1 | -21,498 |
| Total change | | | | 16,552 |

Multiplying the estimated increase of 16,552 orifice plate inspections per year by the release of 5.7 scf per inspection yields a total increase of 94,346 scf (94.3 Mcf) per year of vented methane.

Meter Tube Inspections

In addition to inspecting the orifice plate to ensure meter accuracy, the operator must also periodically inspect the inside of the meter tube. Build-up of scale, rust, grease, or the presence of obstructions such as welds, liquids, or debris in the meter tube can also affect the accuracy of the meter. The new rule would require two types of meter tube inspections – a visual inspection using a borescope and a detailed inspection requiring disassembly of the meter tube. Both types of inspections would require de-pressuring the meter tube in exactly the same manner as is done for an orifice plate inspection. The estimated amount of gas vented during de-pressuring for an orifice plate inspection (5.7 scf) would apply to the de-pressuring for a meter tube inspection.

Order 5 has no requirements for the inspection of meter tubes; therefore, all the meter tube inspections proposed in the new rule would be new. The following table summarizes the number of meter tube inspections that would be required under the proposed rule:

| FMP Category | Percent of FMPs in each Category | Visual Inspection Frequency (years) | Detailed Inspection Frequency (years) | Total Number of Inspections per Year |
|---------------------|---|--|--|---|
| Very High | 1.3 | 1 | 5 | 1,071 |
| High | 21.2 | 2 | 10 | 8,737 |
| Low | 46.2 | 5 | 0 | 6,346 |
| Marginal | 31.3 | 0 | 0 | 0 |
| Total change | | | | 16,154 |

Multiplying the estimated increase of 16,154 meter tube inspections per year by the release of 5.7 scf per inspection yields a total increase of 92,078 scf (92 Mcf) per year of vented methane.

Total Impact of the Proposed Rule on Methane Emissions

The following table summarizes the total increase in annual emissions (718 Mcf) that would result from the provisions in the proposed rule.

| Emission Source | Annual Emissions (scf) |
|---------------------------|-------------------------------|
| Gas sampling | 531,117 |
| Orifice plate inspections | 94,346 |
| Meter tube inspections | 92,078 |
| Total | 717,541 |

Dividing the total increase in gas venting by the approximate number of gas FMPs (68,684) gives an increase of 10.4 scf per FMP per year.

For comparison, the Environmental Protection Agency's New Source Performance Standards for pneumatic controller devices in the oilfield require that each pneumatic controller affected facility at a location between the wellhead and a natural gas processing plant or the point of custody transfer to an oil pipeline, constructed or modified on or after October 15, 2013, must have a bleed rate less than or equal to 6 scf/hour (or 52,560 scf per year). 40 CFR 60.5390(c)(1). A facility that includes an FMP would typically have at least one pneumatic device. The estimated release of gas from the provisions of the proposed rule would increase by only 10.4 scf per year per FMP, or 0.02 percent (one-fiftieth of one percent) of the prescribed ceiling for new pneumatic devices. As a result, the BLM finds this potential increase over current levels of methane emissions due to the proposed rule to be insignificant.

Traffic and Wildlife

Implementing the proposed rule would result in a slight increase in traffic, including one-time trips to FMPs for retrofitting activities and additional trips for meter inspection and maintenance activities. This is a slight increase in traffic compared to the existing heavy-truck traffic presently occurring to support construction, drilling and completion of oil and gas wells, transportation of produced water to disposal points, and transportation of produced oil to market.

In many instances, the system retrofit or meter inspection and maintenance activities required under the proposed rule would be incorporated into daily maintenance activities that operators already perform on existing oil and gas well locations, especially on leases with a substantial amount of production. Therefore, proposed rule-specific increases in truck traffic-related activities and any associated impacts that may result from implementing the requirements of this proposed rule would be negligible.

Economic Impact

An economic impact analysis was conducted as part of this proposed rule. The BLM estimates that implementation of the proposed rule would impose a one-time transition cost associated with implementing the proposed changes of as much as \$33 million, or about \$9,000 per small entity affected by the proposed rule. This one-time cost would be spread over a one- to three-year phase-in period. On an ongoing basis, the proposed changes would increase the industry's annual costs by approximately \$46 million, or about \$13,000 per small entity per year.

c. Direct and Indirect Effects from No Action

Under the No Action Alternative, all new requirements and standards that would be prescribed by the proposed action that could require additional trips to existing gas measurement systems at FMPs in order to collect gas samples, conduct calibration and inspection operations, or perform retrofitting operations to existing equipment would not take place. However, operators or their representatives would still use existing oil and gas field roads and other infrastructure to perform

a variety of activities, such as gaining access to new development areas, performing maintenance activities on existing production and measurement equipment, and also performing gas sampling operations, calibration activities, and inspections as required by the current Order. As such, impacts to air quality or wildlife would remain unchanged.

d. Cumulative and Residual Effects

The CEQ regulations define cumulative effects as “...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions” (40 CFR 1508.7).

Federal and Indian oil and gas development occurs primarily in States located in the Rocky Mountain West, the Southwest, the northern Midwest, the southern Great Plains, California, and Alaska. On the public lands, a variety of activities that affect the human environment already occurs on existing oil and gas leases. Examples of such activities that affect the human environment and already occur on the public lands, in addition to oil and gas development, include recreation, livestock grazing, forestry, mining (e.g., coal and hard rock minerals), operation of power generation facilities, solar energy development, and wind energy development.

Cumulative impacts contributed by the proposed action are expected to be insignificant because all surface-use activities that would be conducted to implement the proposed rule would take place on surface that has already been disturbed, which means disturbance of new surface would not be required. In addition, most of these activities can be performed as part of an operator’s well-maintenance schedule, which would mean they would not result in unique or new activities on the surface.

These activities are either of a minor nature (conducting inspections) or are short term (one-time retrofit of the gas metering system at an FMP). Overall, the impacts resulting from the proposed rule would have a negligible effect on the quality of the human environment.

VI. Tribes, Individuals, Organizations, or Agencies Consulted

a. Tribes Consulted

Pursuant to the President’s memorandum dated April 29, 1994, “Government-to-Government Relations with Native American Tribal Governments” (59 FR 22951) and 512 Departmental Manual 2, the BLM evaluated possible effects of the proposed rule on Federally-recognized Indian tribes. The BLM approves proposed operations on all Indian onshore oil and gas leases (except the Osage Tribe). Therefore, the rule has the potential to affect Indian tribes.

The BLM initiated tribal consultation via outreach meetings in Farmington, New Mexico (July 13, 2011); Tulsa, Oklahoma (July 11, 2011); and Billings, Montana (August 24, 2011), and a workshop/webcast (April 24, 2013), in which potentially affected tribes were invited to attend a

presentation that outlined the agency's intent to replace Order 5. Consultation will be ongoing through the rulemaking effort in which the BLM will engage the tribes on any concerns or issues they may have with the agency's proposed rule.

b. Organizations Consulted

On April 24 and 25, 2013, the BLM held a series of public meetings to discuss proposed revisions to Orders 3, 4, and 5. The meetings were webcast so tribal members, industry, and the public across the country could participate and ask questions, either in person or over the internet. Following the forum, the BLM opened a 36-day informal comment period. As part of its development of the proposed rule, the BLM considered all comments received during the informal comment period and provided responses in the preamble of the proposed rule.

c. Individuals Consulted

The authors of this EA consulted with other personnel within the BLM that were part of the team that developed this proposed rule.

VII. List of Preparers

This assessment was prepared by Barbara Sterling, Colorado State Office, Natural Resources Specialist, and Richard Estabrook, Washington Office (WO-310), Petroleum Engineer.